

AMENDMENTS TO THE CLAIMS

1. (currently amended) A shape memory polymer comprising chemically cross-linked polycyclooctene; wherein the polycyclooctene is synthesized from by ring-opening metathesis polymerization of cis-cyclooctene; wherein the polycyclooctene having has a high trans double bond content; and wherein the chemically cross-linked polycyclooctene is used as a shape memory polymer.
2. (original) A shape memory polymer according to claim 1 which has been cured by adding dicumyl peroxide to the polycyclooctene.
3. (original) A shape memory polymer according to claim 2 further cured through chemical crosslinking upon heating.
4. (original) A shape memory polymer according to claim 3 which after curing is cooled to room temperature.
5. (previously presented) A shape memory polymer according to claim 1, wherein the polycyclooctene has a molecular weight ranging (kg/mol) from about 120 to about 325 before crosslinking.
6. (original) A shape memory polymer according to claim 2 having a tunable transition temperature (T_m of PCO) of about 19 to about 61 °C.
7. (original) A shape memory polymer according to claim 2 having a melting point T_m of about 16 to about 61 °C.
8. (original) A shape memory polymer according to claim 2 having a crystallization point T_c of about 16 to about 39 °C.
9. (currently amended) A shape memory polymer according to claim 2 having a melting enthalpy $\Delta H/J_g^{+}$ of about 22 to about 63 joules per gram.

10. (currently amended) A shape memory polymer according to claim 2 having a melting point T_m of about 16 to about 61 °C, a crystallization point T_c of about 16 to about 39 °C and a melting enthalpy $\Delta H/T_g$ of about 22 to about 63 joules per gram.

11. (original) A shape memory polymer according to claim 2 having a degree of crystallinity at room temperature of from about 2.6% to about 25.5%.

12. (original) A shape memory polymer according to claim 2 evidencing rapid shape memory behavior.

13. (original) A shape memory polymer according to claim 12 wherein the primary stress-free shape of the polymer is recovered within about 1 second on exposure to temperatures above the melting point of the crystalline polymer phase.

14. (canceled)

15. (original) A shape memory polymer molded article formed from a chemically crosslinked polycyclooctene according to claim 1.

16-21. (canceled)

22. (original) An impression material for molding, duplication, rapid prototyping, and embossing comprising a shape memory polymer according to claim 2.

23. (original) A temperature sensor comprising a shape memory polymer according to claim 2.

24. (original) A medical impression material for dentistry, orthopedics and podiatry comprising a shape memory polymer according to claim 2.

25-31. (canceled)

32. (new) A shape memory polymer according to claim 1, wherein the polycyclooctene has a trans double bond content of about 68 to about 81%.